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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,323	11/26/2003	Yong-Kuk Yun	6192.0330.US	8408

7590 07/27/2004  
McGuire Woods LLP  
Suite 1800  
1750 Tysons Boulevard  
McLean, VA 22102-4215

EXAMINER
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WU, SHEAN CHIU

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/721,323	YUN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shean C Wu	1756	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:

On page 9, the notation "Y" should be -- Z --.

On page 22, line 10, the notations " $X^{10}$ ,  $X^{11}$  and  $X^9$ " cannot be understood and the notations " $X^{13}$ ,  $X^{14}$  and  $X^{15}$ " are not defined in formula 11.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the notation "Z" is not defined and "Y" is not part of formula 1.

In Claim 9, the symbol after " $X^8$  and  $X^9$ " should be deleted. Also, the notations " $X^{10}$ ,  $X^{11}$  and  $X^9$ " cannot be understood and the notations " $X^{13}$ ,  $X^{14}$  and  $X^{15}$ " are not defined in formula 11.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 5, 7, 9, 10, 13, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheuble et al. (US 4,970,022).

The reference provides the use of compounds of the formula I as components of liquid-crystalline phases. The invention also provides liquid-crystalline phases, which contain at least one compound of the formula I and liquid crystal display elements (see col. 3, lines 1-7). The reference compound represented by the formula I encompasses the present chemical formula 1 (see the compounds having a fluorinated phenyl ring with isothiocyanate group, Examples 6 and 8). The reference further teaches the suitable compounds of the formula II can be mixed with the reference compound of the formula I (see col. 9, line 41 to col. 10, line 57). The reference anticipates the claimed invention.

5. Claims 1-11, 13-14, 16-17, and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tarumi et al. (US 2002/0030180 or US 6,716,491).

The reference discloses that the compounds of the formula I have a fluorinated phenyl ring with isothiocyanate group can be components of liquid-crystalline medium. The invention also provides liquid-crystalline medium, which contain at least one compound of the formula I and other suitable compounds (see page 6, formulae II and IV). The reference compound represented by the formula I encompasses the present chemical formulae 1, 3, 5 and 7 (see the compounds having a fluorinated phenyl ring with isothiocyanate group through the text). Also, see Mixture Examples 1 and 2, which comprise the compounds of the present formulae 1, 3, 5, 7 and 10. The reference further

discloses that the liquid-crystalline medium having very high specific resistances and low threshold voltage is useful for MLC, TN or STN display devices. The reference anticipates the claimed invention. If not anticipated, it would have been obvious to those skilled in the art to use the compounds of formulae 2, 4 and 8-9, which are known in the art and disclosed by the reference, to mix with the reference compound (formula I) to arrive at the claimed invention.

6. Claims 1-6, 10-11, 13-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 2002-12871.

The reference discloses that liquid crystal medium comprises strongly dielectric positive liquid crystal components A and B. Component A has isothiocyanate acidic radical at the terminal and component B is a biphenyl or a terphenyl compound having polar substituent at one or more terminals. The liquid crystal medium also contains a liquid crystal component having  $\Delta n$  larger than 0.30 at 20 °C and 589.3 nm.

The invention also provides liquid-crystalline medium, which contain at least one compound of the present formula I (see the compounds having a fluorinated phenyl ring with isothiocyanate group from page 8 to page 11, CPU-n-S, PPU-CL-S). The reference compounds represented by the formula II encompass the present chemical formulae 2 and 3. The reference also teaches that the liquid crystal medium having a large range of nematic phase, low viscosity and optical anisotropy, which is useful for displays such as OCB type display. The reference anticipates the claimed invention.

If not anticipated, it would have been obvious to those skilled in the art to use the compounds of formula II with F atom at terminal group, which are known in the art and disclosed by the reference, to mix with the reference compound (formula I) to arrive at the claimed invention.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12, 15, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tarumi et al. as applied to claims 1-11, 13-14, 16-17, and 19-20 above, and further in view of JP 2002-12871.

Tarumi does not teach that the liquid crystal medium comprising the compound of the present formula 1 is useful for OCB type display device. JP 12871 discloses that liquid crystal medium comprises strongly dielectric positive liquid crystal components A and B. Component A having isothiocyanate acidic radical at the terminal, which corresponds to the present formula 1 and component B is a biphenyl or a terphenyl compound having polar substituent at one or more terminals, which corresponds the present formula 2. Because the liquid crystal medium of Tarumi and JP 12871 comprising the compounds of the present invention, it would have been obvious to those

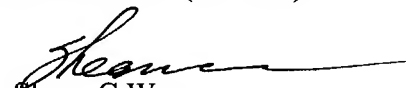
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skilled in the art to take advantage of JP teaching by applying Tarumi medium in OCB display device.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Shean C Wu  
Primary Examiner  
Art Unit 1756

SCW